

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Method of and apparatus for producing Granulated Synthetic Material

We, Buss A.G. of Niklaus von Flue-Strasse 24, Basel 2, Switzerland, a Swiss Corporation, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The production of uniformly granulated synthetic material is usually carried out with spray nozzles. At the outlet of the machine the already formed individual strands of circular rectangular or triangular cross-sections are cooled in a water bath close to the nozzle and then cut into predetermined lengths by a cutting machine. This method is of limited capacity because the strands, emerging from the machine at a high temperature, have a tendency to stick, which makes it difficult to guide them, without mutual damage. Normally, the highest output of these machines is limited to 60 kg/hr. To raise the output of granules, processes were developed for synthetic materials with rubber-like elastic properties such as softened polyvinyl chloride and polyethylene, in which a ribbon in the cold state is cut up, first longitudinally and then transversely, into granules of cubic or similar form. Also, it has already been attempted to form separate strands in the warm state with the aid of shaping rollers, which strands are then cut into granules in the ordinary way by the cutting machine. The drawback of this method, however, is that the individual strands remain attached together, so that instead of actual granules the cutting machine cuts off strips.

It has been found that this difficulty can be overcome according to the present invention by providing the shaping rollers with peripheral grooves, so arranged that a groove of one roller is always opposite a wider flat or like profile between two grooves of the other roller.

The synthetic material is passed through the rollers and formed into a profiled ribbon

having adjacent longitudinal ribs which project alternately from each of its surfaces, and this ribbon is cut transversely at intervals.

The width of the grooves in the rollers is preferably only slightly less than the distance between them, so that the longitudinal ribs of the ribbon emerging from the rollers are joined together by weak easily broken webs.

In the accompanying drawings:—

Fig. 1 is a front elevation of a pair of shaping rollers according to the invention;

Fig. 2 is a transverse section across a ribbon of synthetic material and

Fig. 3 is a view similar to Fig. 2 showing the ribbon at the moment of cutting.

The shaping rollers 1 and 2 are grooved to conform with the desired profile of granule, which in this case is triangular, but could be rectangular or semi-circular. The grooves 3 in the roller 1 and the grooves 4 in the roller 2 are arranged so that each groove is opposite a wider flat profile between the grooves in the other roller. Accordingly, a ribbon is produced in which the synthetic material, such as polyvinyl chloride or polyethylene, is formed with the desired granule profile alternately on its top and bottom surfaces, with narrow webs between. After the shaping process and after being cooled in a bath of water, the ribbon is cut transversely to its direction of motion in the cutting machine. In the machine the moving knife coming from above first presses the ribbon against the fixed knife. On account of the alternate upward and downward projection of the rolled profiles, the ribbon breaks at the regions 5 into separate longitudinal strips so that the cut proper produces individual granules which are no longer attached together. The breaking up of the ribbon at the moment of cutting will be evident from Fig. 3, in which the thin lines indicate the original position and movement of the upwardly directed profiles.

Satisfactory breaking up of the ribbon into separate strips is assisted by an appropriate choice of the distance 6 between a groove of

one roller and the adjacent groove on the other according to the particular deformation and swelling properties of the synthetic material to be processed. With strongly swelling elastic synthetic materials this distance must be made greater than for brittle and non-swelling synthetic materials.

What we claim is:—

1. A method of producing granulated synthetic material in which the mass of material is passed between a pair of grooved shaping rollers and formed into a profiled ribbon having adjacent longitudinal ribs which project alternately from each of its surfaces, and the ribbon is cut transversely at intervals.

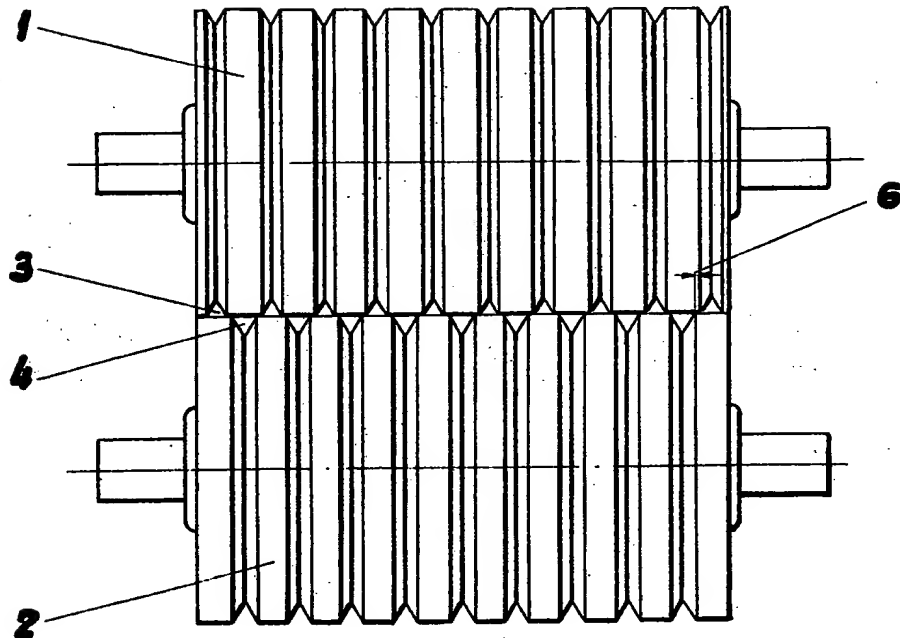
2. Apparatus for forming the profiled ribbon

used in the method of claim 1 comprising shaping rollers provided with peripheral grooves so arranged that a groove of one roller is always opposite a wider flat or like profile between two grooves of the other roller.

3. Apparatus according to claim 2, in which the width of the roller grooves is only slightly less than the distance between them, so that the longitudinal ribs of the ribbon emerging from the rollers are joined together by weak easily-broken webs.

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**Fig. 1****Fig. 2****Fig. 3**